

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A test tube type discrimination apparatus comprising:

a tube rack which holds test tubes arranged in a line, an opening of the tubes being held on top, the tube rack being conveyed in a direction corresponding to the line of the test tubes;

a first electronic camera which is located above the tube rack and picks up a top view image of each of the test tubes held in the tube rack,

a second electronic camera which is located at a side of the tube rack and picks up a side view image of each of the test tubes held in the tube rack, the first and second electronic cameras simultaneously picking up the top view image and the side view image;

an extracting unit which receives the top view image picked up by the first electronic camera and the side view image picked up by the second electronic camera and extracts a top view image edge and a side view image edge to recognize a test tube pattern of each of the test tubes, the test tube pattern including opening and side patterns;

a reference pattern memory which stores plural reference ~~top-view-image-edges and reference-side-view-image-edges-patterns~~ each of which including a reference opening pattern and a reference side pattern of each of the test tubes of plural types; and

a comparison determination unit which compares the ~~top-view-image-edge-opening pattern and the side-view-image-edge-extracted-side pattern~~ recognized by the extracting unit and the plural reference top-view-image-edges and the plural reference side-view-image-edges of the test tubes with the reference opening pattern and the reference side pattern of each of the test

tubes included in the plural reference patterns stored in the reference pattern memory to determine a type of each of the test tubes held in the tube rack.

2. (Withdrawn) A test tube type discrimination apparatus comprising:

a single electronic camera which picks up images of a plurality of test tubes held in a test tube rack one by one from between an opening and a side of each of the test tubes;

a pattern recognition unit which receives data of the images picked up by the electronic camera and extracts an edge of each of the images to recognize a test tube pattern of each of the test tubes including an integral inclined pattern of opening and side patterns of each of the test tubes;

a standard pattern memory which stores integral inclined patterns of opening and side patterns of the test tubes as standard patterns; and

a comparison determination unit which compares the test tube pattern recognized by the pattern recognition unit and the standard patterns of the test tubes stored in the standard pattern memory to determine a type of each of the test tubes.

3. (Original) The test tube type discrimination apparatus according to claim 1, wherein the first and second electronic cameras each employ a CCD as an image pickup device.

4. (Withdrawn) The test tube type discrimination apparatus according to claim 2, wherein the electronic camera employs a CCD as an image pickup device.

5. (Original) The test tube type discrimination apparatus according to claim 1, further comprising a sorting unit which sorts the test tubes whose images are picked up, according to a type based on determination results of the comparison unit.

6. (Withdrawn) The test tube type discrimination apparatus according to claim 2, further comprising a sorting unit which sorts the test tubes whose images are picked up, according to a type based on determination results of the comparison unit.

7. (Canceled)